

Claims:

**What is claimed is:**

1. 1. A method for thawing frozen biopharmaceutical solutions comprising:
  2. providing a container that contains a biopharmaceutical solution, at least a portion of the biopharmaceutical solution being frozen,
  4. providing an oscillatory driver coupled to the biopharmaceutical solution;
  5. providing a heat flux into the biopharmaceutical solution; and
  6. inducing oscillatory motion of the biopharmaceutical solution via oscillatory motion of the oscillatory driver to accelerate thawing, compared to motionless thawing, of the portion of the biopharmaceutical solution that is frozen.
1. 2. The method of claim 1, wherein the oscillatory motion of the oscillatory driver is harmonic motion.
1. 3. The method of claim 1, wherein the oscillatory motion of the oscillatory driver is disharmonic motion.
1. 4. The method of claim 1, wherein an amplitude of the oscillatory motion of the oscillatory driver ranges from about from about 0.0002 mm to about 10,000 mm.
1. 5. The method of claim 2, wherein an amplitude of the oscillatory motion of the oscillatory driver ranges from about more preferably from about 0.015 mm to about 350 mm.
1. 6. The method of claim 1, wherein a frequency of the oscillatory motion of the oscillatory driver ranges from about 0.01 Hz to about 20 GHz.
1. 7. The method of claim 4, wherein a frequency of the oscillatory motion of the oscillatory driver ranges from about 0.1 Hz to about 1 kHz.

1 8. The method of claim 5, wherein a frequency of the oscillatory motion of the  
2 oscillatory driver ranges from about 0.4 Hz to about 40 Hz.

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1 9. The method of claim 1, wherein the oscillatory motion of the oscillatory driver is  
2 induced by inducing oscillatory motion of the container.

1 10. The method of claim 1, wherein the oscillatory motion of the oscillatory driver is  
2 induced by inducing oscillatory motion of the portion of the biopharmaceutical solution  
3 that is frozen.

1 11. The method of claim 1, wherein the oscillatory motion of the oscillatory driver is  
2 induced by inducing oscillatory motion of an unfrozen portion of the biopharmaceutical  
3 solution.

1 12. A device for accelerated thawing of a biopharmaceutical solution comprising  
2 a container configured to contain the biopharmaceutical solution, wherein at least  
3 a portion of the biopharmaceutical solution is frozen;

4 a heating element, coupled to the container, that provides heat flux into the  
5 container; and

6 an oscillatory driver capable of being coupled to the biopharmaceutical solution,  
7 for inducing oscillatory motion of the biopharmaceutical solution to accelerate thawing,  
8 compared to motionless thawing, of the portion of the biopharmaceutical solution that is  
9 frozen.

1 13. The device of claim 12, wherein the container comprises a thermal jacket.

1 14. The device of claim 12, wherein the container comprises an agitator.

1 15. The device of claim 12, wherein the oscillatory driver is mechanically coupled to  
2 the container.

1 16. The device of claim 12, wherein the oscillatory driver is magnetically coupled to  
2 the container.

1 17. The device of claim 12, wherein the oscillatory driver is coupled to an internal  
2 structure, and the internal structure is located internally to the container.

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